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IDENTIFIERS Pennsylvania State University

ABSTRACT

Pennsylvania State University has developed, evaluated, and implemented a series of modules and an entire three-credit teacher education course which is offered completely by microcomputer. The course is entitled "Educating Special Learners." The modules use the Apple II series and the IBM PC series. Evaluation of the course, based on three criteria--cost efficiency, academic achievement, and student acceptance--indicate that the program meets all goals of the teacher education program. In addition, the course has been used successfully at the University for the past two and one-half years. Approximately 48 institutions in the United States and Canada are already using this course or plan to implement it into their teacher education programs. A description is given of the course, and diagrams of the computer programming process are included. (CB)

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COMPUTER ASSISTED INSTRUCTION IN TEACHER EDUCATION: A FULL LENGTH COURSE

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In addition to the main campus, Penn State maintains 17 other campuses through which freshmen and sophomores take the first two years of most undergraduate degrees. Some majors, though, do not have faculty at all campuses and students must wait until their junior years to take their first courses in their majors. Although there are no Education faculty at some campuses, there is a great need to begin instruction in the field of teacher education before the junior year of a four-year program.

In response to that problem, the University has developed, evaluated, and implemented a series of modules and an entire 3-credit teacher education course which is offered completely by microcomputer. In addition, an innovative microcomputer based procedure was developed to evaluate the extent to which students and inservice teachers have achieved certain competencies.

A full length 3-semester hour course titled EDUCATING SPECIAL LEARNERS is given by microcomputer as a "stand alone" course; all instruction is given by the computer through a series of computer modules. The modules are easily transportable to other institutions and use the following computers: Apple II series (II+, IIc, IIe) and the IBM PC series (PC, PCXT, PCjr). This computer assisted instruction course can also be taken through Penn State's programs in Continuing Education or by Correspondence. The course has been used successfully at Penn State for the past 2½ years on 13 of its campuses.

Evaluation of the course was based upon three criteria: cost efficiency, academic achievement, and student acceptance. These three criteria have been met and exceeded. Evaluations were carried out internally at Penn State and by institutions of higher education who have decided to implement the course. Currently, the course is in use in approximately four dozen institutions in the United States and Canada.

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Problem 1

The Pennsylvania State University is a multi-campus institution with 17 Commonwealth campuses in addition to the main campus. Most students attend a branch campus for two years then transfer to the main campus for the last two years of their baccalaureate programs. Our problem: there are no Special Education faculty at the branch campuses but there is a real need to begin instruction about problems of educating the handicapped before the junior year of a 4-year program.

Problem 2

In 1980, the State Department of Education mandated that all persons who apply for teaching and instructional certificates in any area of education (e.g., counseling, teaching chemistry, supervision, elementary education) must demonstrate ten generic competencies dealing with education of the handicapped.

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A similar problem existed: insufficient staff at the branch campuses and the main campus to provide even modestly individualized programs or courses of study for such diverse groups. The ten generic competencies are:

1. UNDERSTANDS THE LEGAL BASIS FOR EDUCATING STUDENTS WITH HANDICAPS IN THE LEAST RESTRICTIVE ENVIRONMENT.

2. UNDERSTANDS THE IMPLICATIONS WHICH HANDICAPPING CONDITIONS HAVE FOR THE LEARNING PROCESS.

3. RECOGNIZES STUDENTS WHO MAY BE IN NEED OF SPECIAL SERVICES.

4. MAKES USE OF APPROPRIATE RESOURCE AND SUPPORT SERVICES.

5. CONFERS WITH AND REPORTS TO PARENTS ON EDUCATIONAL PROGRAMS FOR STUDENTS WITH HANDICAPS.

6. FACILITATES THE SOCIAL ACCEPTANCE OF PERSONS WITH HANDICAPS BY ENCOURAGING POSITIVE INTERPERSONAL RELATIONSHIPS.

7. USES INDIVIDUAL, GROUP, AND CLASSROOM MANAGEMENT TECHNIQUES FOR EFFECTIVE ACCOMMODATION OF STUDENTS WITH HANDICAPS.

8. ASSESSES THE EDUCATIONAL NEEDS OF STUDENTS WITH HANDICAPS.

9. MODIFIES INSTRUCTIONAL STRATEGIES TO PROVIDE FOR THE INDIVIDUAL NEEDS OF STUDENTS WITH HANDICAPS.

10. EVALUATES CLASSROOM PROGRESS OF STUDENTS WITH HANDICAPS.

Problem 3

There is a need to provide a high quality computer based correspondence course to teachers and parents who want basic information about handicapped children.

Our Solution

In response to the needs sketched above, the University has developed a series of microcomputer modules and an entire three credit course to assist University students, parents, and inservice teachers to obtain basic information about the handicapped. An innovative microcomputer based procedure was developed to evaluate the extent to which students and inservice teachers have achieved the competencies and prescribe remedial strategies if necessary. The quizzes and modules were tested, are in use at the University, and available for use by other institutions.

Now, instead of waiting until their junior year to obtain instruction dealing with education of the handicapped, students at any of the campuses can take a three credit course in Special Education at any time. Similarly, students, parents, or teachers in rural areas can take a full course or a set of modules on their own if they have access to a computer.

An Introduction to the Education of the Handicapped is given by microcomputer and is a "stand-alone" course; all instruction is given by the computer through a series of computer modules. The modules are easily

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transportable to other institutions and use the following computers: Apple (II+, IIc, IIe); IBM (PC, PC XT, PCjr, PC AT; and PC compatibles).

The course, or a selected set of modules prescribed for the individual student, also prepares students for the special education generic competency examination, which is required University-wide.

The full length course titled EDUCATING SPECIAL LEARNERS is a 3 semester hour course and deals with the problems of educating children who are handicapped, or gifted, or who have other special problems. The course covers procedures for assessment of youngsters, litigation and legislation, definitions, characteristics, placement, generic teaching strategies, and coordination of services. It is a stand alone, computer assisted instruction course, which can be taken through Penn State's programs in resident instruction, continuing education, or correspondence. At Penn State, three semester credits are awarded for successful completion of the course.

The computer assisted instruction course requires no knowledge of computers by the student or instructor. An introductory disk plus other material fully explains what is required of the student. The student reads a chapter in the textbook before sitting down at the computer. Then, the student merely inserts the first disk of the first chapter in the disk drive and works through the computer chapter on an interactive basis. In addition to completing the 18 chapters on the computer, the student takes periodic quizzes. Students are on their own to pursue the materials and may do so at their own pace. However, students should plan to schedule 3 to 5 hours per week computer time. Each of the 18 disks takes 60 to 120 minutes to complete, and the instruction time spent on the computer equals roughly 37½ clock hours, the same amount of time as is required for a conventional three credit course. Because the program is self-paced, some students may complete the lessons quickly, where others may work at a slower pace and repeat the lessons as often as they wish.

The total course package includes the following:

Set of 22 double sided disks containing the 18 content modules.

Set of 7 double sided disks containing practice quizzes.

Set of 2 double sided disks containing examination items (for instructor's use).

Textbook.

Proctor Manual, 18 pages. Provides information to oversee the mechanical or technical operations of the course.

Monitoring of the course is a very straightforward affair and is being conducted on other campuses by mathematics, English, educational psychology and other nonspecial education personnel. The course offering costs are considerably lower than a conventional course. The course can be offered for as few as one or two students or as many as your equipment and scheduling will permit.

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Overall, approximately 3.0 FTE have been devoted to course development. PERT Charts (Table 1) illustrate the course development procedures and development times for certain activities. Table 2 contrasts different versions of the course. Table 3 provides a summary of the main features of the course.

The course has been in use at Penn State for 2 years; approximately 300 students have completed the course. Approximately four dozen universities and school systems in the US and Canada have obtained the material for use within their own institutions.

For further information, contact Dr. G. Phillip Cartwright by letter or telephone:

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GPC1/ADCIS1b

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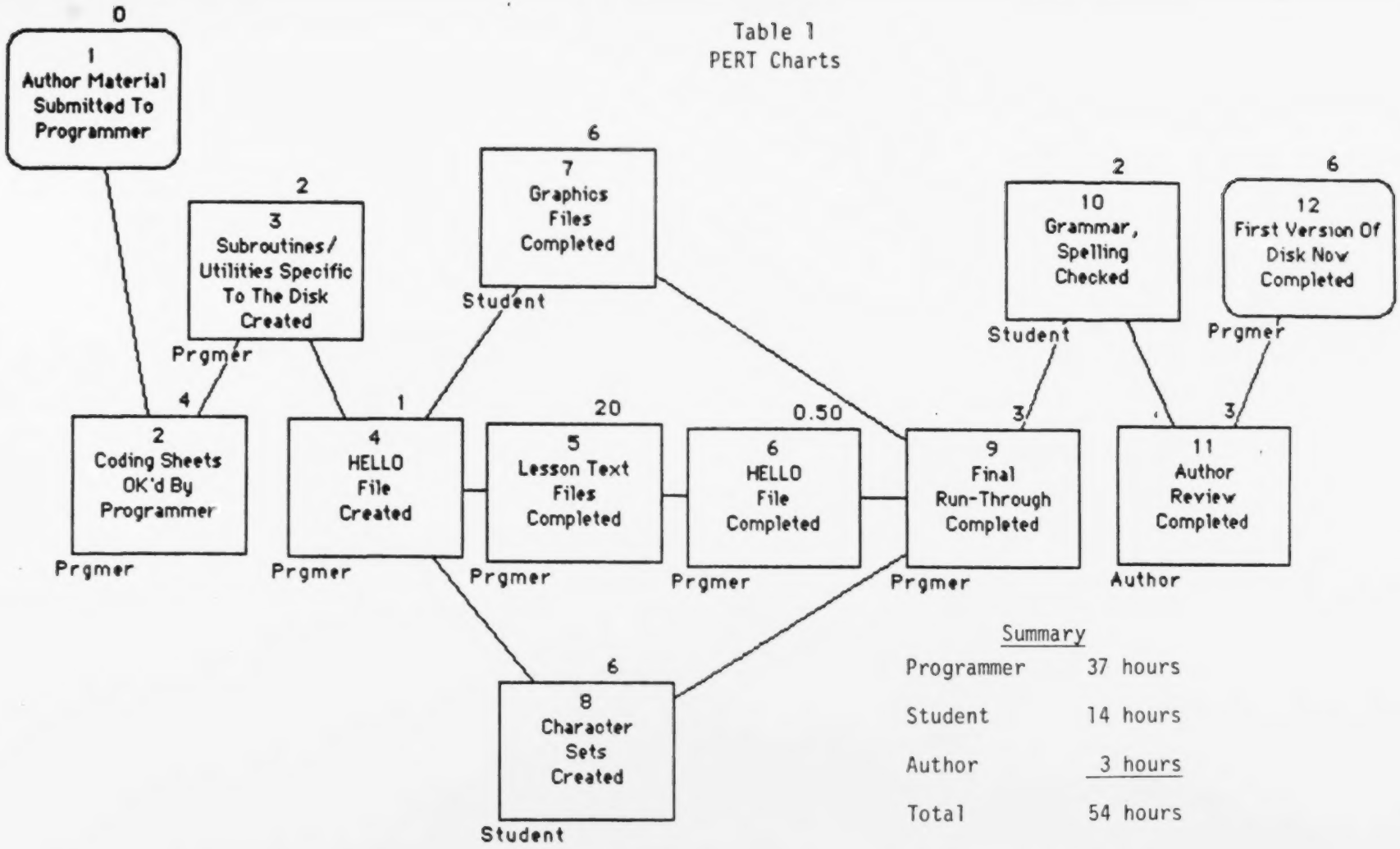
Table 1
PERT Charts



Summary

Programmer	37 hours
Student	14 hours
Author	3 hours
Total	54 hours

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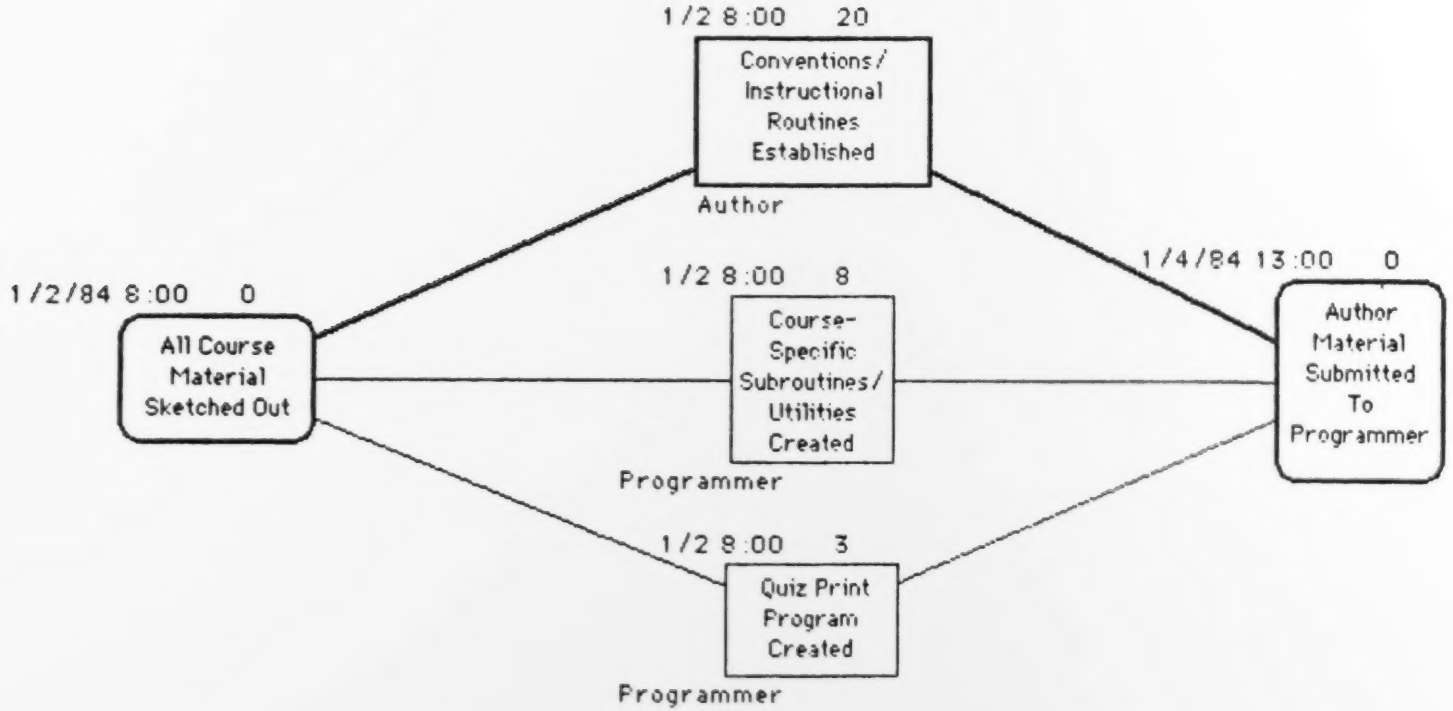
PROGRAMMING ONE SIDE OF A LESSON DISK

Table 1
PERT Charts



STEPS THAT NEED BE COMPLETED ONE TIME ONLY

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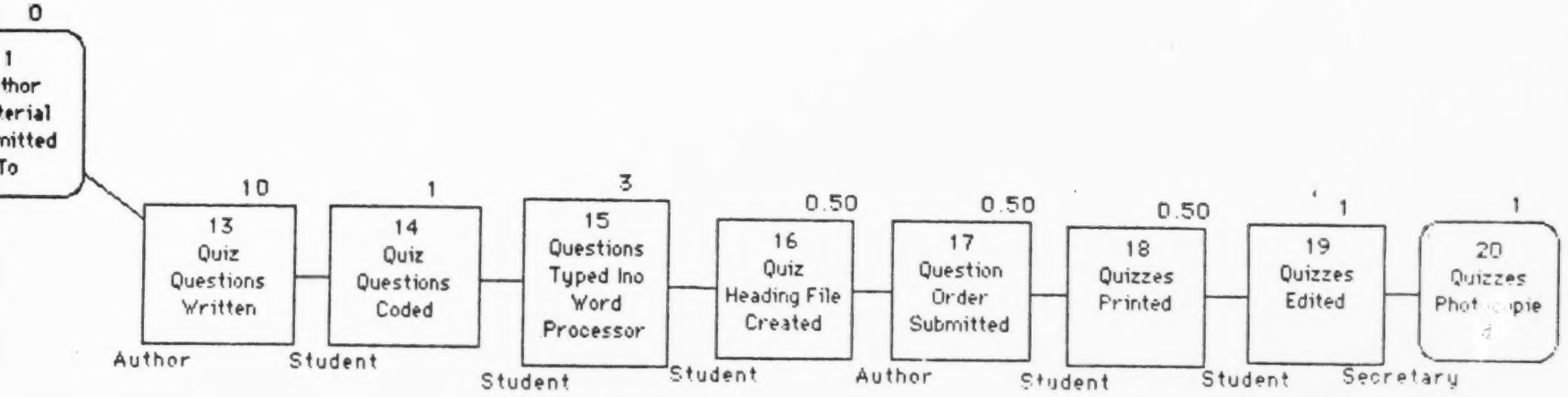
Table 1
PERT Charts



WRITE, PRINT QUIZZES

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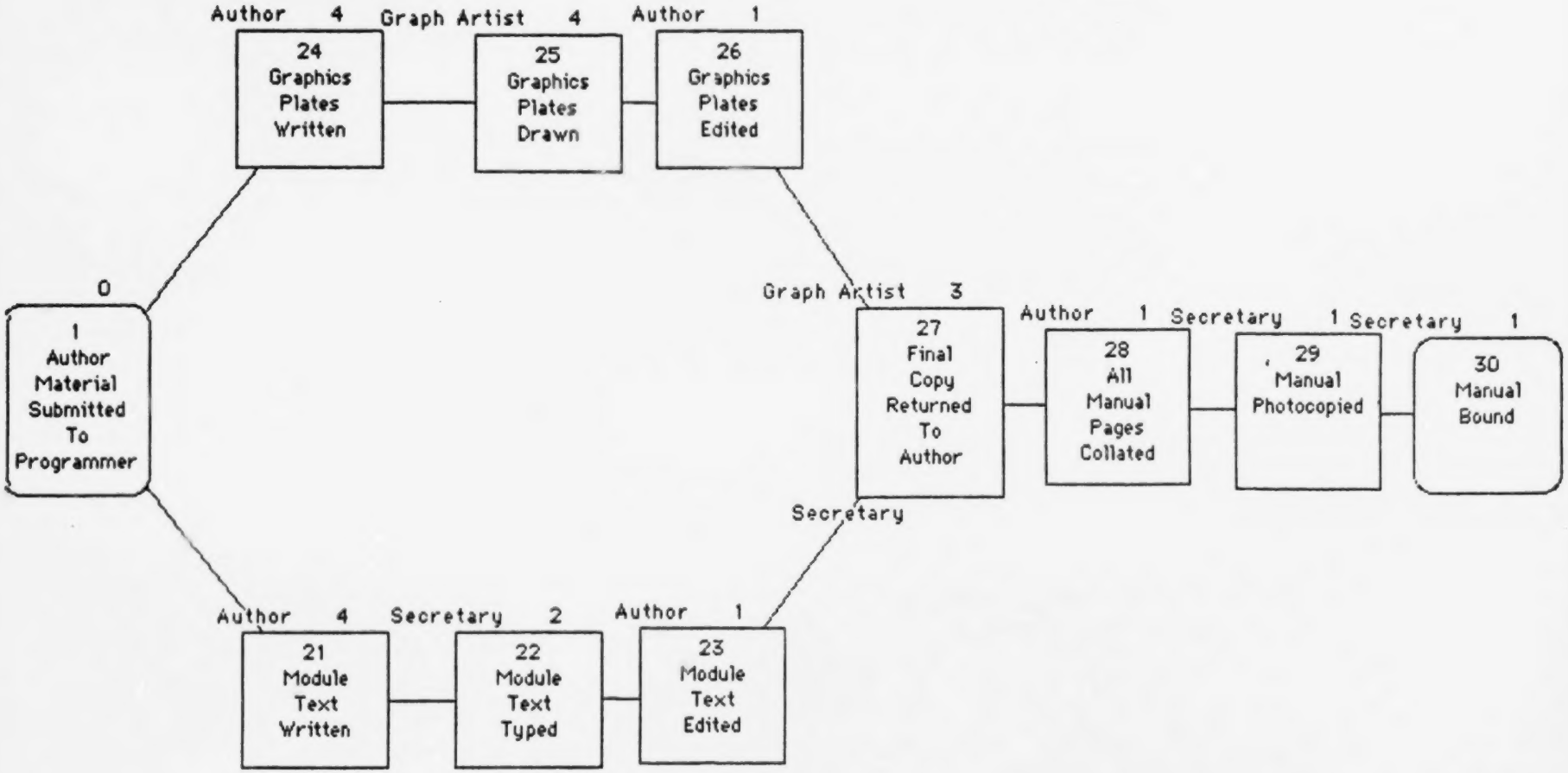
Table 1
PERT Charts



WRITE, EDIT, PRINT STUDENT MANUAL

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TABLE 2

Versions of Educating Special Learners

APPLE

1.0	1st complete version (54 disks) 1.05 corrections and slight revisions 1.07
1.1	Final PILOT, 1st edition
1.2	SuperPILOT version
2.0	2nd edition (34 disks)
2.1	Paging System Added
2.5	Revised; Learner Control Added (44 disks) On-line quizzes added (7 disks)

TANDY

1.2	Experimental
2.1	Same as Apple

IBM

2.1	Same as Apple
2.5	Same as Apple

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TABLE 3

E D U C A T I N G S P E C I A L L E A R N E R S

EDUCATING SPECIAL LEARNERS is a stand-alone, computer-assisted instruction package that provides the student with a three-credit course. This software package leads the student through the problems of educating children who are handicapped, or gifted, or who have other special problems. The course covers procedures for assessment and placement of youngsters, litigation, generic teaching strategies, and coordination of services.

EDUCATING SPECIAL LEARNERS requires no knowledge of computers on the part of the student or the instructor. The student first reads a chapter in the required textbook, and then works through the associated content module on an interactive basis. The computer displays text, graphs, and charts, and asks questions after every two or three displays. The student answers the questions (multiple choice, matching, fill-in, etc.) and then is branched to other parts of the module depending upon the response.

The course consists of 44 disks, built around the 18 content modules plus 7 practice quiz disks. Each chapter of the textbook is on one disk. Most of the disks are double-sided. The Apple version is used with single-sided drives and the IBM version requires double-sided drives. The manuals accompanying the disks provide additional information, off-line graphics, and related material. In addition to completing the 18 chapters in the course software and the practice quizzes, the student takes periodic quizzes, which are supplied for the instructor's use on 2 floppy disks.

TEXT: Cartwright, G. P., Cartwright, C. A., & Ward, M. E. (1985). Educating special learners (2nd ed.). Belmont, CA: Wadsworth Publishing Company.

COMPLETION TIME: 35 to 40 clock hours

PRICE: $600 (additional sets of disks are $250 per set)

MATERIALS INCLUDE:

--Set of Instructor's Test Disks (with 400 test items)
--Set of 22 double sided disks containing the 18 content modules
--Set of 7 double sided disks containing practice quizzes
--Proctor's Manual
--Textbook

PREVIEW: A preview disk is available at no charge.

AVAILABLE VERSIONS: Apple II+, IIe, and IIc; IBM PC, PC jr, XT, and AT

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